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LIST OF ACRONYMS

ADA	American with Disabilities Act of 1990
AASHTO	American Association of State Highway and Transportation Officials
ACHP	Advisory Council on Historic Preservation
AHPA	Archeological and Historic Preservation Act
APA	Agricultural Protection Areas
BMP	Best Management Practice
BRT	Bus Rapid Transit
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO	Carbon monoxide
CO ₂	Carbon dioxide
dB _A	A-weighted decibels
DERR	Division of Environmental Response and Remediation
DFIRM	Digital flood insurance rate maps
DMPO	Dixie Metropolitan Planning Organization
DOEFOE	Determination of Eligibility and Finding of Effect
EA	Environmental Assessment
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FPPA	Farmland Protection Policy Act
GIS	Geographic Information Systems
HHS	U.S. Department of Health and Human Services
I-15	Interstate 15
IDF	Intensity Duration Frequency
IJR	Interchange Justification Report
ITS	Intelligent Transportation System
KOP	Key observation point
L(eq)	Equivalent (or average) Noise Level
LOS	level-of-service
LUST	Leaking Underground Storage Tank
LWCFA	Land and Water Conservation Fund Act
mg/L	Milligrams per liter
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mpg	Miles per gallon
mph	Miles per hour
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NRHP	National Register of Historic Places
NMHC	Non-methane hydrocarbon
NO ₂	Nitrogen Dioxide

NO _x	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTU	nephelometric turbidity unit
O ₃	Ozone
OHWM	ordinary high-water mark
Pb	Lead
PCB	Polychlorinated biphenyl
PM _{2.5}	Particulate Matter with a diameter of less than 2.5 micrometers
PM ₁₀	Particulate Matter with a diameter of less than 10 micrometers
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SPI	Single Point Interchange
STIP	Statewide Transportation Improvement Program
SWPPP	Storm Water Pollution Prevention Plan
TDI	Tight Diamond Interchange
TDM	Transportation Demand Management
TMDL	Total Maximum Daily Load
TDS	Total Dissolved Solids
TIP	Transportation Improvement Plan
TNM	Traffic Noise Model
TSM	Transportation System Management
TSS	Total Suspended Solids
UCA	Utah Code Annotated
UDAQ	Utah Division of Air Quality
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
UDWQ	Utah Division of Water Quality
UDWR	Utah Division of Wildlife Resources
UGS	Utah Geological Survey
UPDES	Utah Pollutant Discharge Elimination System
USACE	United States Army Corps of Engineers
USC	United States Code
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile organic compound
vpd	Vehicles per day
vmt	Vehicle miles traveled
µg/m ³	Micrograms per cubic meter
°C	degrees Celsius
°F	degrees Fahrenheit

WORKS CITED

Blue Ribbon Advisory Council on Climate Change

2008 Report to Governor Jon M. Huntsman, Jr. October 3.

Boman, A., and T. Buckel

2007 Sampling for presence of red shiner (*Cyprinella lutrensis*) and Virgin spinedace (*Lepidomeda mollispinis*) distribution in the lower Santa Clara River. In Fridell and others, Southern region native aquatics 2007 field summary program report. Utah Division of Wildlife Resources. Salt Lake City, UT.

Carpenter, Jamie

2008 Personal communication between Carpenter, City of St. George, and Shawn Frye of HDR Engineering regarding public water sources. March 7.

Deacon, J.E., P.B. Schumann, and E.L. Stuenkel

1987 Thermal tolerances and preferences of fishes of the Virgin River system (Utah, Arizona, Nevada). Great Basin Naturalist 47:538–546. Environmental Laboratory

1987 Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

2006 Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. ERDC/Technical Report-06-16. U.S Army Engineer Research and Development Center, Vicksburg, MS.

Demus, Dave

2008 Personal communication between Dave Demus, City of St. George, and Dana Holmes of HDR Engineering regarding asbestos in the study area. July 9.

[DERR] Utah Division of Remedial Responses and Remediation

2008 DERR Interactive Map. www.atlas.utah.gov/deqderr. Accessed February 19, 2008.

[EPA] U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Department of Agriculture, U.S. Department of Commerce, U.S. Department of the Interior, and U.S. Department of Transportation

2000 Technical Support Document: Control of Emissions of Hazardous Air Pollutants from Motor Vehicles and Motor Vehicle Fuels. EPA 420-R-00-023.

2006 National Wetlands Mitigation Action Plan. www.mitigationactionplan.gov. Accessed September 5, 2007.

2007 National Ambient Air Quality Standards (NAAQS). www.epa.gov/air/criteria.html. Accessed February 13, 2007.

2008 EnviroMapper for EnviroFacts. www.epa.gov/enviro/emef. Accessed February 19, 2008.

2008 UDWQ data downloaded from EPA STORET database at www.epa.gov/storet. Accessed September 9, 2008.

Executive Order 11988, *Floodplain Management* (May 24, 1977), 23 CFR 650.113.

[FEMA] Federal Emergency Management Agency

2006a *Answers to Questions about the NFIP – Flood Hazard Assessments and Mapping Requirements*. www.fema.gov/business/nfip/fhamr.shtm. Accessed January 19, 2006.

2006b *Flood Insurance Study of Washington County, Utah, and Incorporated Areas*. Preliminary study. December 6.

2007 *Flood Insurance Study*. www.fema.gov/pdf/fhm/dfm_dfft.pdf. Accessed May 14, 2007.

2008 *Community Status Book*. www.fema.gov/cis/UT.pdf. Accessed January 28, 2008. [FEMA's Community Status Book is updated daily.]

[FHWA] Federal Highway Administration

1983 *Visual Impact Assessment for Highway Projects*. Publication No. FHWA-HI-88-054. Washington, DC.

1987 *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*. Technical Advisory T6640.8A. October 30.

1990 *Pollutant Loadings and Impacts from Highway Stormwater Runoff*, Volume I: Design Procedure. Report No. FHWA-RD-88-006.

1996 *Retention, Detention, and Overland Flow for Pollutant Removal from Highway Stormwater Runoff*. Report No. FHWA-RD-96-095,

2003 *National Highway Runoff Water-Quality Data and Methodology Synthesis*, Volume III: Availability and Documentation of Published Information for Synthesis of Regional or National Highway-Runoff Quality Data. Report No. FHWA-EP-03-056.

2006 *Interim Guidance on Air Toxic Analysis in NEPA Documents*. February.

Golden, M.

2007 Personal communication between Golden, Utah Division of Wildlife Resources Wildlife Biologist, and Becky Holloway of HDR/FishPro regarding sensitive fish species and utilization in the ecosystem study area. December 11.

2008a Personal communication between Golden, Utah Division of Wildlife Resources Wildlife Biologist, and Becky Holloway of HDR/FishPro regarding sensitive fish species and utilization in the ecosystem study area as discussed during a meeting in St. George, Utah. January 23.

2008b Personal communication between Golden, Utah Division of Wildlife Resources Wildlife Biologist, and Becky Holloway of HDR/FishPro regarding obtaining site-specific capture records. January 28.

2008c Personal communication between Golden, Utah Division of Wildlife Resources Wildlife Biologist, and Becky Holloway of HDR/FishPro regarding sensitive fish species and utilization in the ecosystem study area. January 30.

Hansen, Eric

1997 *Rocks and Plants: A Pocket Field Guide to the Geology and Botany of the St. George Basin*. Shop-Chicken Publications.

HDR Engineering, Inc.

2007a Meeting between Steve Meismer (Virgin River Program), Lee Cabell (Horrocks Engineering), Rick Black (HDR Engineering), and Trent Toler (HDR Engineering) regarding sensitive fish and bird species in and near the ecosystem study area. December 19.

2007b Personal communication between Keith Day, Utah Division of Wildlife Resources, and Rick Black of HDR Engineering regarding sensitive bird species in and near the ecosystem study area. December 20.

2008 *Delineation of waters of the U.S. in support of the Dixie Drive Interchange Project.*

Heaps, Michael

2008 Personal communication from Heaps, Horrocks Engineers, to Shawn Frye of HDR Engineering regarding traffic volumes for the Dixie Drive Interchange. September 29.

Heckmann, R., J.E. Deacon, and P.D. Greger

1987 *Parasites of the woundfin minnow, *Plagopterus argentissimus*, and other endemic fishes from the Virgin River, Utah.* Great Basin Naturalist 46(1986):662–676.

Houk, Jeff

2008 *Climate Change Cumulative Effects.* May 15.

Meismer, S.

2007 Personal communication between Meismer, Virgin River Program local coordinator, and Becky Holloway of HDR/FishPro regarding sensitive fish species and utilization in the ecosystem study area. December 10.

Stamieszkin, K.

2007a *Sampling for presence of red shiner and the upper limit of Virgin spinedace distribution in the lower Santa Clara River – field report.* In Fridell and others: Southern region native aquatics 2007 field summary program report. Utah Division of Wildlife Resources. Salt Lake City, UT.

2007b *Sampling for presence of red shiner in the lower Santa Clara River – field report.* In Fridell and others: Southern region native aquatics 2007 field summary program report. Utah Division of Wildlife Resources. Salt Lake City, UT.

Stantec

2000 *Stormwater Quality Data Technical Report*, Salt Lake County, UT. September.

State of Utah

2008 Utah Administrative Code R317-2-13: *Classification of Waters of the State.* www.rules.utah.gov/publicat/code/r317/r317-002.htm#T14. Accessed August 29, 2008.

U.S. Census Bureau

2008 *Washington County Wage and Employment Data.* factfinder.census.gov/servlet/SAFFPopulation?_event=ChangeGeoContext&geo_id=05000US49053&geoContext=01000US&street=&county=washington&cityTown=washington&state=04000US49&zip=&lang=en&sse=on&ActiveGeoDiv=geoSelect&useEV=&pctxt=fp&pgsl=010&submenuId=population_0&ds_name=null&ci_nbr=&qname=®=%3A&keyword=&industry. Accessed January 3, 2008.

U.S. Department of Agriculture

1990 *Virgin River Basin—Utah Cooperative Study*. August.

U.S. Department of Commerce, Bureau of Economic Analysis

2007 *Regional Economic Accounts*.

[USFWS] U.S. Fish and Wildlife Service

2000 *Endangered and threatened wildlife and plants; designation of critical habitat for the woundfin and Virgin River chub*. Federal Register 65(17):4140–4156. January 26.

[USGS] U.S. Geological Survey

2000 *Geohydrology and Numerical Simulation of Groundwater Flow in the Central Virgin River Basin of Iron and Washington Counties, Utah*. Technical Publication No. 116.

2007 *Surface water data for Utah*. USGS Gage No. 09413000, Santa Clara River at St. George, Utah, and No. 09413500, Virgin River near St. George, Utah. waterdata.usgs.gov/ut/nwis/monthly. Accessed January 8, 2008.

Utah Division of Water Quality

2004 *TDML Water Quality Study of the Virgin River Watershed*. September 20.

2006 *Utah 2006 Integrated Report Volume I – 305(b) Assessment*. www.waterquality.utah.gov/documents/DOC_RULE.htm. Accessed August 28, 2008.

Utah Division of Water Rights

2008 Shapefile of points of diversion from Water Rights database. File wrpod.exe downloaded from www.waterrights.utah.gov/gisinfo/wrcover.asp. Accessed January 28, 2008.

[UDWR] Utah Division of Wildlife Resources

2005 Utah Natural Heritage Program database, for all Utah compiled by USGS 7.5' Quadrangle Map.

2008a County lists of Utah's federally listed threatened (T), endangered (E), and candidate (C) species. dwrcdc.nr.utah.gov/ucdc/ViewReports/te_cnty.pdf. Accessed February 11, 2008.

2008b Utah sensitive species list. dwrcdc.nr.utah.gov/ucdc/ViewReports/SSL121407.pdf. Accessed February 11, 2008.

[Utah AGRC] Utah Automated Geographic Reference Center

2008 SGID: Utah's Statewide Geographic Information Database. agrc.utah.gov/agrc_sgid/sgidintro.html. Accessed January and February 2008.

Utah Department of Workforce Services

2008a Utah Economic Data Viewer. jobs.utah.gov/jsp/wi/utalmis/default.do. Accessed January 3, 2008.

2008b Utah Department of Workforce Services Employment and Unemployment Information. jobs.utah.gov/opencms/wi/pubs/une/stgeorgemsa.pdf. Accessed January 3, 2008.

Utah Governor's Office of Planning and Budget

2007 *State of Utah and Counties Population Estimates 1940–2007*.
December.

2008a *2005 Baseline Economic and Demographic Projections*.
governor.utah.gov/dea. Accessed January 4, 2008.

2008b Utah Natural Heritage Program database.

White House Office of Environmental Policy

1993 *Protecting America's wetlands: A fair, flexible, and effective approach*. www.wetlands.com/fed/aug93wet.htm. August 24.
Accessed October 2007.

Utah State Auditor's Office

2008 *2006 Financial Statements for Washington County*. www.sao.state.ut.us/reports/lgfs.htm. Accessed January 4, 2008.